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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/675,029	09/28/2000	Ricardo I. Fuentes	11828/1	7682
26646	7590	10/16/2003	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			CULBERT, ROBERTS P	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 10/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/675,029	Applicant(s) FUENTES, RICARDO I.	
	Examiner Roberts Culbert	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Response to Arguments***

Applicant's arguments filed 9/22/03 have been fully considered but they are not persuasive.

Applicant has stated (Page 9) that, *"Claim 1 has been amended to recite that the process includes the step of injecting at least one liquid in a holding tank such that a fluid meniscus is pre-formed. Support for this amendment can be found, for example, at page 8, line 17 to page 9, line 8, and in Figures 1A to 1D, which describe and illustrate that a meniscus is formed prior to, e.g., pre-formed, the meniscus contacting a surface of an object."*

Although no reference to a meniscus being pre-formed or formed prior to contacting the substrate is mentioned in page 8, line 17 to page 9, line 8 of the specification, the figures do show that a meniscus (16) is formed before contact with the substrate (Figure 1A) and also that menisci (16) are formed after contact (Figure 1B).

Applicant has further argued that, *"the combination of Britten and Moffat does not disclose, or even suggest, a fluid meniscus process that includes the step of injecting at least one liquid in a holding tank such that a fluid meniscus is pre-formed, as recited in amended claim 1. As more fully set forth above, the Specification describes that a meniscus is formed prior to, e.g., pre-formed, the meniscus contacting a surface of an object. In contrast, Britten states that "The applicator assembly (8) comprises processing applicator (10) and rinse applicator (14), and is placed in close proximity to an inverted substrate surface (26) to be processed, such that the processing fluid 12 and the rinse water 16 both attach to the inverted substrate surface 26, forming menisci". Column 3, lines 18 to 23 (emphasis added). Thus, Britten does not describe that the meniscus is pre-formed prior to the meniscus contacting a surface of the substrate, but rather that a meniscus is formed by the surface of the substrate"*.

The argument is not persuasive. A meniscus is simply the curved upper surface of a column of fluid. Referring to Figure 1, Britten shows a column of fluid (12) and (16) inside tanks (15), and (17) that clearly must be filled to a level above the surface of tanks prior to contact (otherwise no contact will occur between the fluids (12) and (16), and substrate, as the substrate is shown to be some distance above the

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tanks). Therefore, the fluids for contacting the substrate (26) have a meniscus at the surface *before* contacting the substrate. It would in fact be impossible for the liquids in the invention of Britten to contact the substrate without forming a meniscus beforehand. Britten's statement that menisci are formed after contact is no indication that a meniscus is not also formed on the surface of the fluid prior to contact.

Applicant also shows a meniscus (16) formed both prior to substrate contact (Figure 1A) and menisci (16) formed after substrate contact (Figure 1B).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-19 and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,660,642 to Britten in view of U.S. Patent 5,171,393 to Moffat.

Britten teaches a method for wet etching a substrate by contacting the substrate with the meniscus of a liquid etchant. Referring to Figure 1, Britten shows a processing applicator (10) containing a processing fluid (12). The processing fluid may be a liquid etchant. See Abstract and (Col. 2, Lines 41-50) and (Col. 4, Lines 32-34). The etchant meniscus is contacted with the substrate (26) (Col 3, Lines 18-25). The fluid meniscus is pre-formed above the edges of the holding tank (15). See Figure 1. The holding tank has at least one channel to hold the fluid, and at least one overflow channel. See Figure 1. The liquid etchant is injected into the holding tank (15) via pump (28). The substrate is removed after contact with the fluid meniscus for rinsing and drying. The substrate may have a protective material layer such as a photoresist (Col. 4, Line 33). Britten teaches moving the substrate relative to the holding tank (Col. 2, Lines 21-25) as well as moving the tank relative to the substrate (Col. 3, Lines 23-26). Britten teaches drying by evaporation, but also shows a gas current such as forced air (dry compressed air) may be applied to the substrate (Col. 4, Line 25).

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Britten does not teach the use of a holding fixture for the substrate. However the use of a holding fixture for wet processing is well known in the etching art. Moffat teaches that a vacuum chuck is suitable for holding a substrate for subsequent wet processing steps (Col. 3, Lines 19-21). It would have been obvious to one of ordinary skill in the art at the time of invention to use a vacuum chuck to hold the substrate in order to facilitate wet processing as taught by Moffat. The vacuum chuck holder is interpreted by the examiner to be a "fluidic means" as broadly defined by applicant in claim 3.

Regarding claim 5, Britten shows that the solvent is re-circulated and replenished by use of a filter and pump. See Figure 1. Britten also teaches that it is known in the art to recycle and heat a solvent (Col. 1, lines 52-55). Heating is interpreted to be a form of agitation since claim 5 is not limited to the type of agitation (i.e. mechanical, thermal). It would have been obvious to one of ordinary skill in the art to heat the solution in order to improve the etch rate.

Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,660,642 to Britten in view of U.S. Patent 5,171,393 to Moffat and U.S. Patent 5,279,703 to Habberger.

As applied above, Britten in view of Moffat discloses the method of invention substantially as claimed, but does not teach the use of electromagnetic radiation. Habberger teaches a process for etching a substrate in which electromagnetic radiation is used to heat a substrate and improve the etch rate (Col. 4, Lines 65-68). It would have been obvious to one of ordinary skill in the art at the time of invention to irradiate the substrate in the well-known manner in order to heat the substrate and improve the etch rate as indicated by Habberger (Col. 4, Lines 6-10). The location of the energy source is not given any patentable weight because one of ordinary skill in the art would recognize that the energy source could be secured anywhere that permits the energy source to focus on the substrate.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (703) 305-7965. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

R. Culbert



GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1760